

REMARKS

Claims 1-83 are pending in the case, of which, only claims 1-8, 15 and 28 are currently under consideration, as claims 9-14, 16-27 and 29-83 have been withdrawn from consideration. Claims 2-8 are original to the case. Claims 1, 15 and 28 are currently amended. Support for the amendments to claims 1 and 15, is found, e.g., in FIGS. 1, 2A and 3, and in paragraphs [0101], [0111] and [0112] of the present published application (US2004/0138733). Claim 28 has been amended to make it consistent with the amendments to claim 1. No new matter has been added.

Claim 1, which is the sole claim in independent form currently under consideration, is now amended to feature a nano-actuated medical device that includes a housing sized to pass within a body lumen, and a nanoactuator, e.g., including a porous mat or paper that includes carbon nanotubes dispersed therein, the nanoactuator being operatively associated with the housing and, upon electrical energization, actuating expansion of the housing within the body lumen.

As described in paragraphs [0111] and [0112], Applicants' system can be used in angioplasty where the catheter is navigated through a lumen until a distal end is within an occluded artery. Once positioned, the actuator is electrically energized, such as by the application of 1 or 1.5 volts. The current flow generates microbubbles within voids in the nanoactuator, such as between carbon nanotubes of nanopaper. The trapped gas causes expansion of the actuator which, in turn, causes the housing (e.g., that is in the form of an elastomeric sheath) to expand as well. Such expansion imparts a force against an interior surface of the body lumen and clears any blockage. After de-energization of the actuator, the microbubbles re-oxidize, reversing the expansion of the actuator. In some embodiments, the actuator applies a force to a stent about the actuator rather than directly to a body lumen, causing the stent to expand to support a diseased lumen. Thus, the claimed systems can provide relatively large forces directly to a body lumen or a stent about the catheter within a body lumen, without the need for using hydraulically activated balloons that must withstand high fluid pressures and that may require remote delivery of fluid. As a result, the claimed systems can be further miniaturized, allowing access to even smaller body lumens.

Claims 1-8, 15 and 28 have been rejected as being anticipated by Dev et al., U.S. Patent No. 6,347,247 ("Dev"). Applicants respectfully request reconsideration in light of the amendments to the claims and the following remarks.

Dev states at col. 4, lines 14-23 that

The present invention is based on the seminal discovery that application of an electrical impulse to a vessel can induce the vasodilation of that vessel. A method of the invention utilizes an electrical impulse which, when applied to a vessel at a sufficient strength and duration, induces the vasodilation of the vessel. The invention therefore provides methods for inducing or increasing vessel vasodilation in a subject and methods for inducing or increasing the flow of fluid through a vessel in a subject.

According to Dev et al., an electrical impulse is applied directly to the inner surface of the vessel (body lumen) to induce the vessel to dilate (expand). Thus, Dev et al.'s method and device, which applies an electrical impulse directly to the wall of a vessel to induce vasodilation, is quite different from Applicants' device of a nanoactuator for actuating expansion (and contraction) of a housing within a body lumen. Furthermore, at col. 2, lines 58-61, Dev et al. discloses that the electrical impulse applied to the wall of the vessel can be from about 50 to 90 volts per 1.5 mm, and the duration can be from about 0.5 ms to 10 ms. As such, Dev et al. cannot anticipate, or render obvious, any claim currently under consideration.

It is believed that all claims currently under consideration are patentable. Applicants respectfully request a Notice of Allowance.

All fees are being paid concurrently herewith, including a three-month Petition for Extension of Time Fee and the fee for continued examination on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to deposit account 06-1050, referencing Account No. 06-1050, referencing Attorney Docket No. 10527-755002.

Respectfully submitted,

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/timothy a. french/
Timothy A. French
Reg. No. 30,175

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110
Telephone: (617) 542-5070
Facsimile: (617) 542-8906
21835113.doc